In the Claims

1. (Previously Presented) An optical node comprising:

a data interface operable to receive data for transmission to a destination node;

a buffer operable to store the data;

a transmitting unit operable to couple to an optical transmission medium having a plurality of data channels and to selectively transmit optical signals on the data channels; and

a controller operable to receive a token authorizing transmission on one of the data channels selected from a group of token-controlled ones of the data channels, to generate a transmission control message identifying the destination node and the authorized data channel, to communicate the transmission control message for receipt by the destination node, to transmit the data on the authorized data channel using the transmitting unit after communicating the transmission control message, and to communicate the token to a next node.

2. (Original) The optical node of Claim 1, wherein the controller is further operable to determine timing information associated with transmission of the data, to identify the timing information in the transmission control message, and to transmit the data in accordance with the timing information.

3. (Original) The optical node of Claim 1, wherein the controller is further operable to communicate the token to the next node before transmission of the data on the authorized data channel.

4. (Original) The optical node of Claim 1, wherein the controller is further operable to determine whether to delay communicating the token and to communicate the token to the next node after a delay in response to determining to delay communicating the token.

5. (Original) The optical node of Claim 1, wherein the transmitting unit includes a tunable laser, and the controller is further operable to tune the laser to transmit first optical signals associated with the data on the authorized data channel.

6. (Original) The optical node of Claim 1, wherein the buffer maintains a plurality of queues, each queue associated with one of a plurality of remote nodes, and wherein the buffer is operable to store the data in a selected one of the queues that is associated with the destination node.

7. (Original) The optical node of Claim 1, wherein the controller is further operable to receive a plurality of tokens, each token authorizing transmission on a separate data channel, to generate a plurality of transmission control messages, each transmission control message identifying the destination node and one of the separate authorized data channels, to communicate the transmission control messages for receipt by the destination node, to divide the data into a plurality of portions, to transmit each portion on a separate one of the authorized data channels, and to communicate the tokens to the next node.

8. (Original) The optical node of Claim 1, wherein:

the data interface is further operable to receive second data for transmission to a second destination node;

the buffer is further operable to store the second data; and

the controller is further operable to determine that the token affords time for a second transmission, to generate a second transmission control message identifying the second destination node and the authorized data channel, to communicate the second transmission control message for receipt by the second destination node, and to transmit the second data on the authorized data channel using the transmitting unit after communicating the second transmission control message.

9. (Original) The optical node of Claim 1, wherein the transmission control message further identifies a size of the data.

10. (Original) The optical node of Claim 1, further comprising a control interface operable to couple to a control channel, the control interface operable to receive the token on the control channel, to transmit the token on the control channel, and to communicate the transmission control message on the control channel.

11. (Original) The optical node of Claim 1, further comprising:

a receiving unit operable to couple to the optical transmission medium and to selectively receive second optical signals on the data channels; and

an incoming buffer operable to store incoming data;

wherein the data interface is further operable to transmit the incoming data to a local destination; and

wherein the controller is further operable to receive a second transmission control message identifying a second destination node and a second authorized data channel, to determine whether the optical node is the second destination node, and to receive the second optical signals on the second authorized data channel using the receiving unit after determining that the optical node is the second destination node.

12. (Original) The optical node of Claim 11, wherein the receiving unit includes a tunable filter, and the controller is further operable to tune the filter to receive the second optical signals on the second authorized data channel.

13. (Original) The optical node of Claim 1, wherein the controller is further operable to store passing data in the buffer and to retransmit the passing data using the transmitting unit upon detection of an error.

14. (Original) An optical communication system comprising:

a plurality of optical communication nodes;

optical transmission media interconnecting the optical communication nodes, the optical transmission media having a plurality of data channels; and

a plurality of logical tokens corresponding to the data channels;

wherein each of the optical communication nodes is operable to:

receive data for transmission to a destination one of the optical communication nodes;

receive one of the logical tokens;

identify one of the data channels associated with the logical token; and

transmit the data to the destination optical communication node using the identified data channel.

15. (Original) The optical communication system of Claim 14, wherein each of the optical communication nodes is further operable to determine timing information associated with transmission of the data, to identify the timing information in a transmission control message, to communicate the transmission control message for receipt by the destination optical communication node, and to transmit the data in accordance with the timing information.

16. (Original) The optical communication system of Claim 14, wherein each of the optical communication nodes is further operable to communicate the logical token to a next node before transmission of the data on the identified data channel.

17. (Original) The optical communication system of Claim 14, wherein each of the optical communication nodes is further operable to determine whether to delay communicating the logical token and to communicate the logical token to a next node after a delay in response to determining to delay communicating the logical token.

18. (Original) The optical communication system of Claim 14, wherein each of the optical communication nodes includes a transmitting unit that includes a tunable laser, and each of the optical communication nodes is further operable to tune the laser to transmit first optical signals associated with the data on the identified data channel.

19. (Original) The optical communication system of Claim 14, wherein each of the optical communication nodes includes a buffer that maintains a plurality of queues, each queue associated with one of a plurality of remote optical communication nodes, and wherein the buffer is operable to store the data in a selected one of the queues that is associated with the destination optical communication node.

20. (Original) The optical communication system of Claim 14, wherein each of the optical communication nodes is further operable to receive a plurality of logical tokens, each logical token authorizing transmission on a separate data channel, to generate a plurality of transmission control messages, each transmission control message identifying the destination optical communication node and one of the separate identified data channels, to communicate the transmission control messages for receipt by the destination optical communication node, to divide the data into a plurality of portions, to transmit each portion on a separate one of the identified data channels, and to communicate the logical tokens to a next node.

21. (Original) The optical communication system of Claim 14, wherein each of the optical communication nodes is further operable to receive second data for transmission to a second destination optical communication node, to determine that the logical token affords time for a second transmission, and to transmit the second data to the second destination optical communication node using the identified data channel.

22. (Original) The optical communication system of Claim 14, wherein each of the optical communication nodes is further operable to generate a transmission control message identifying the destination optical communication node, the identified data channel, and a size of the data, and to communicate the transmission control message for receipt by the destination optical communication node.

23. (Original) The optical communication system of Claim 14, wherein each of the optical communication nodes is further operable to couple to a control channel, to receive the logical token on the control channel, and to transmit the logical token on the control channel.

24. (Original) The optical communication system of Claim 14, wherein each of the optical communication nodes comprises:

a receiving unit operable to couple to the optical transmission media and to selectively receive second optical signals on the data channels;

an incoming buffer operable to store incoming data; and

a data interface operable to transmit the incoming data to a local destination;

wherein each of the optical communication nodes is further operable to receive a transmission control message identifying a second destination optical communication node and a second identified data channel, to determine whether the optical communication node is the second destination optical communication node, and to receive the second optical signals on the second identified data channel using the receiving unit after determining that the optical communication node is the second destination optical communication node.

25. (Original) The optical communication system of Claim 24, wherein the receiving unit includes a tunable filter, and each of the optical communication nodes is further operable to tune the filter to receive the second optical signals on the second identified data channel.

26. (Original) The optical communication system of Claim 14, wherein each of the optical communication nodes is further operable to store passing data in a buffer and to retransmit the passing data using a transmitting unit upon detection of an error.

27. (Previously Presented) A method for token-controlled data transmission comprising:

receiving data for transmission to a destination node;

storing the data in a buffer;

coupling to an optical transmission medium having a plurality of data channels;

receiving a token authorizing transmission on one of the data channels selected from a group of token-controlled ones of the data channels;

generating a transmission control message identifying the destination node and the authorized data channel;

communicating the transmission control message for receipt by the destination node;

transmitting the data on the authorized data channel after communicating the transmission control message; and

communicating the token to a next node.

28. (Original) The method of Claim 27, further comprising:

determining timing information associated with transmission of the data;

identifying the timing information in the transmission control message; and

transmitting the data in accordance with the timing information.

29. (Original) The method of Claim 27, further comprising communicating the token to the next node before transmitting the data on the authorized data channel.

30. (Original) The method of Claim 27, further comprising determining whether to delay communicating the token and communicating the token to the next node after a delay in response to determining to delay communicating the token.

31. (Original) The method of Claim 27, wherein transmitting the data on the authorized data channel includes tuning a laser to transmit first optical signals associated with the data on the authorized data channel.

32. (Original) The method of Claim 27, wherein the buffer maintains a plurality of queues, each queue associated with one of a plurality of remote nodes, and wherein the buffer is operable to store the data in a selected one of the queues that is associated with the destination node.

33. (Original) The method of Claim 27, further comprising:

receiving a plurality of tokens, each token authorizing transmission on a separate data channel;

generating a plurality of transmission control messages, each transmission control message identifying the destination node and one of the separate authorized data channels;

communicating the transmission control messages for receipt by the destination node;

dividing the data into a plurality of portions;

transmitting each portion on a separate one of the authorized data channels; and

communicating the tokens to the next node.

34. (Original) The method of Claim 27, further comprising:

receiving second data for transmission to a second destination node;

storing the second data in the buffer;

determining that the token affords time for a second transmission;

generating a second transmission control message identifying the second destination node and the authorized data channel;

communicating the second transmission control message for receipt by the second destination node; and

transmitting the second data on the authorized data channel after communicating the second transmission control message.

35. (Original) The method of Claim 27, wherein the transmission control message further identifies a size of the data.

36. (Original) The method of Claim 27, further comprising:

coupling to a control channel;

receiving the token on the control channel;

transmitting the token on the control channel; and

communicating the transmission control message on the control channel.

37. (Original) The method of Claim 27, further comprising:

receiving a second transmission control message identifying a second destination node and a second authorized data channel;

determining whether an optical node is the second destination node;

receiving second data on the second authorized data channel after determining that the optical node is the second destination node;

storing the second data in a second buffer; and

transmitting the second data to a local destination.

38. (Original) The method of Claim 37, wherein receiving the second data on the second authorized data channel includes tuning a filter to receive second optical signals associated with the second data on the second authorized data channel.

39. (Original) The method of Claim 27, further comprising storing passing data in the buffer and retransmitting the passing data upon detection of an error.

40. (Previously Presented) Logic for token-controlled data transmission, the logic encoded in media and operable when executed to:

receive data for transmission to a destination node;

store the data in a buffer;

couple to an optical transmission medium having a plurality of data channels;

receive a token authorizing transmission on one of the data channels selected from a group of token-controlled ones of the data channels;

generate a transmission control message identifying the destination node and the authorized data channel;

communicate the transmission control message for receipt by the destination node;

transmit the data on the authorized data channel after communicating the transmission control message; and

communicate the token to a next node.

41. (Original) The logic of Claim 40, further operable when executed to:

determine timing information associated with transmission of the data;

identify the timing information in the transmission control message; and

transmit the data in accordance with the timing information.

42. (Original) The logic of Claim 40, further operable when executed to communicate the token to the next node before transmitting the data on the authorized data channel.

43. (Original) The logic of Claim 40, further operable when executed to determine whether to delay communicating the token and communicate the token to the next node after a delay in response to determining to delay communicating the token.

44. (Original) The logic of Claim 40, further operable when executed to tune a laser to transmit first optical signals associated with the data on the authorized data channel.

45. (Original) The logic of Claim 40, wherein the buffer maintains a plurality of queues, each queue associated with one of a plurality of remote nodes, and wherein the buffer is operable to store the data in a selected one of the queues that is associated with the destination node.

46. (Original) The logic of Claim 40, further operable when executed to:

receive a plurality of tokens, each token authorizing transmission on a separate data channel;

generate a plurality of transmission control messages, each transmission control message identifying the destination node and one of the separate authorized data channels;

communicate the transmission control messages for receipt by the destination node;

divide the data into a plurality of portions;

transmit each portion on a separate one of the authorized data channels; and

communicate the tokens to the next node.

47. (Original) The logic of Claim 40, further operable when executed to:

receive second data for transmission to a second destination node;

store the second data in the buffer;

determine that the token affords time for a second transmission;

generate a second transmission control message identifying the second destination node and the authorized data channel;

communicate the second transmission control message for receipt by the second destination node; and

transmit the second data on the authorized data channel after communicating the second transmission control message.

48. (Original) The logic of Claim 40, wherein the transmission control message further identifies a size of the data.

49. (Original) The logic of Claim 40, further operable when executed to:

couple to a control channel;

receive the token on the control channel;

transmit the token on the control channel; and

communicate the transmission control message on the control channel.

50. (Original) The logic of Claim 40, further operable when executed to:

receive a second transmission control message identifying a second destination node and a second authorized data channel;

determine whether an optical node is the second destination node;

receive second data on the second authorized data channel after determining that the optical node is the second destination node;

store the second data in a second buffer; and

transmit the second data to a local destination.

51. (Original) The logic of Claim 50, further operable when executed to tune a filter to receive second optical signals associated with the second data on the second authorized data channel.

52. (Original) The logic of Claim 40, further operable when executed to store passing data in the buffer and retransmit the passing data upon detection of an error.

53. (Previously Presented) An optical node comprising:

means for receiving data for transmission to a destination node;

means for storing the data in a buffer;

means for coupling to an optical transmission medium having a plurality of data channels;

means for receiving a token authorizing transmission on one of the data channels selected from a group of token-controlled ones of the data channels;

means for generating a transmission control message identifying the destination node and the authorized data channel;

means for communicating the transmission control message for receipt by the destination node;

means for transmitting the data on the authorized data channel after communicating the transmission control message; and

means for communicating the token to a next node.

54. (Previously Presented) A method for token-controlled data transmission comprising:

receiving data for transmission to a destination node;

storing the data in a buffer, wherein the buffer maintains a plurality of queues, each queue associated with one of a plurality of remote nodes, and wherein the buffer is operable to store the data in a selected one of the queues that is associated with the destination node;

coupling to an optical transmission medium having a plurality of data channels;

coupling to a control channel;

receiving a token on the control channel authorizing transmission on one of the data channels selected from a group of token-controlled ones of the data channels;

determining timing information associated with transmission of the data;

generating a transmission control message identifying the destination node, the authorized data channel, the timing information, and a size of the data;

communicating the transmission control message on the control channel for receipt by the destination node;

transmitting the data on the authorized data channel in accordance with the timing information after communicating the transmission control message, wherein transmitting the data on the authorized data channel includes tuning a laser to transmit first optical signals associated with the data on the authorized data channel;

communicating the token on the control channel to a next node;

receiving a second transmission control message identifying a second destination node and a second authorized data channel;

determining whether an optical node is the second destination node;

receiving second data on the second authorized data channel after determining that the optical node is the second destination node, wherein receiving the second data on the second authorized data channel includes tuning a filter to receive second optical signals associated with the second data on the second authorized data channel;

storing the second data in a second buffer; and

transmitting the second data to a local destination.